

**AMENDMENT AND PRESENTATION OF CLAIMS**

Please replace all prior claims in the present application with the following claims, in which claims 1-9 are currently amended.

1. (Currently Amended) Resolution A resolution filter (4) for a spectrum analyser (1), wherein the resolution filter (4) has the following complex, discrete impulse response  $h_{used}(k)$  :

$$h_{used}(k) = C_1 \cdot \left[ e^{-C_2 T_a^2 \cdot k^2} * h_{allp}(t) \right] \cdot e^{-jC_3(k-k_0)^2 \cdot T_a^2}$$

wherein  $C_1$ ,  $C_2$  and  $C_3$  are constants,  $k$  is the sampling index and  $T_a$  is the sampling period, wherein  $h_{allp}(t)$  is the Fourier retransform of  $e^{j\phi(f)}$ , in which  $\phi(f)$  is a randomly-specified phase response dependent upon the frequency of the transmission function of the resolution filter,

wherein  $k_0$  is a free variation parameter and

wherein the variation parameter  $k_0$  is set in such a manner that the frequency overshoot determined by the group delay of the resolution filter (4) is compensated.

2. (Currently Amended) Resolution A resolution filter according to claim 1, characterised in that wherein:

the variation parameter  $k_0$  is set in such a manner that the middle of the frequency response  $H_{used}(f)$  of the resolution filter is disposed at the frequency origin at the frequency  $f=0$ .

3. (Currently Amended) Resolution A resolution filter according to any one of claims claim 1 or 2, characterised in that wherein:

$\phi(f)$  and ~~therefore also~~  $h_{allp}(t)$  are selected in such a manner that a minimal-phase resolution filter is formed.

4. (Currently Amended) Resolution A resolution filter (4) according to any one of claims claim 1 to 3, characterised in that wherein:

the value of the constant  $C_1$  is:

$$C_1 = \sqrt{\frac{\pi}{2 \ln(2)}} \cdot B_{res} \cdot T_a$$

wherein  $B_{res}$  is the bandwidth of the resolution filter (4).

5. (Currently Amended) Resolution A resolution filter (4) according to any one of claims claim 1 to 4, characterised in that wherein:

the value of the constant  $C_2$  is

$$C_2 = \frac{\pi^2}{2 \ln(2)} \cdot \frac{1}{{T_{res}}^2},$$

wherein  $T_{res} = 1/B_{res}$  is the reciprocal bandwidth  $B_{res}$  of the resolution filter (4).

6. (Currently Amended) Resolution A resolution filter (4) according to any one of claims claim 1 to 5, characterised in that wherein:

the value of the constant  $C_3$  is

$$C_3 = \frac{\pi}{K} \cdot {B_{res}}^2,$$

wherein  $B_{res}$  is the bandwidth of the resolution filter (4) and K is the K-factor of the resolution filter (4), wherein the K-factor is defined via the equation:

$$f(t) = \frac{1}{K} \cdot B_{res}^2 \cdot t$$

and  $f(t)$  is a frequency variable with time  $t$  in a linear manner, which is supplied to a mixer (3) of the spectrum analyser (1) connected upstream of the resolution filter (4).

7. (Currently Amended) Spectrum A spectrum analyser for analysing the spectrum of an input signal with a resolution filter (4) specifying the frequency resolution, wherein the resolution filter (4) has the following complex, discrete impulse response  $h_{used}(k)$ :

$$h_{used}(k) = C_1 \cdot \left[ e^{-C_2 T_a^2 \cdot k^2} * h_{allp}(t) \right] \cdot e^{-jC_3(k-k_0)^2 \cdot T_a^2}$$

wherein  $C_1$ ,  $C_2$  and  $C_3$  are constants,  $k$  is the sampling index and  $T_a$  is the sampling period, wherein  $h_{allp}(t)$  is the Fourier retransform of  $e^{j\phi(f)}$ , in which  $\phi(f)$  is a randomly-specified phase response dependent upon the frequency of the transmission function of the resolution filter,

wherein  $k_0$  is a free variation parameter and

wherein the variation parameter  $k_0$  is set in such a manner that the frequency overshoot determined by the group delay of the resolution filter (4) is compensated.

8. (Currently Amended) Spectrum A spectrum analyser according to claim 7, characterised in that wherein:

the variation parameter  $k_0$  is set in such a manner that the middle of the frequency response  $H_{used}(f)$  of the resolution filter is disposed at the frequency origin at the frequency  $f=0$ .

9. (Currently Amended) ~~Spectrum A~~ spectrum analyser according to ~~any one of claims~~  
claim 7 or 8, characterised in that wherein:

$\varphi(f)$  and ~~therefore also~~  $h_{allp}(t)$  are selected in such a manner that a minimal-phase resolution filter is formed.